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NATIONAL MARINE FISHERIES SERVICE
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F/V OCEAN PROWLER

Cruise Report OP-91-01

Longline Survey of the Gulf of Alaska

July 13-September 27, 1991

Prepared by

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On September 27, 1991, the National Marine Fisheries Service, Alaska Fisheries Science Center (AFSC), completed the fifth annual longline survey of sablefish (*Anoplopoma fimbria*) resources of the Gulf of Alaska. The survey area extended from the Islands of Four Mountains eastward to Dixon Entrance (Figure 1). This survey was designed to continue the time series (1979-91) of the Gulf of Alaska portion of the Japan-U.S. cooperative longline survey.

OBJECTIVES

1. Determine the relative abundance and size composition of the commercially important species: sablefish, shortspine thornyhead (*Sebastolobus alascanus*), and rougheye and shortraker rockfishes (*Sebastes aleutianus* and *S. borealis*).

2. Determine the relative abundance and size composition of other groundfish species caught during the survey, Pacific cod (*Gadus macrocephalus*), arrowtooth flounder (*Atheresthes stomias*), grenadiers (Macrouridae), and the relative abundance of Pacific halibut (*Hippoglossus stenolepis*).

VESSEL AND GEAR

Survey operations were conducted using the F/V Ocean Prowler, a chartered U.S. longline vessel. The 47 m (155 ft) vessel carried standard longline hauling gear and was equipped with radios, radars, LORAN receivers, track plotter, a processing line, three sets of plate freezers, and refrigerated holds. Vessel personnel consisted of a captain, an engineer, a cook, six fishermen, and five processors.

Gear configuration was unchanged from that of the 1988-90 surveys. Units of gear (skates) were 100 m (55 fm) long and contained 45 size 13/0 Mustad[1] circle hooks. Hooks were attached to 38 cm (15 in) gangions that were secured to beckets tied into the groundline at 2 m (6.5 ft) intervals. Five meters (16 ft) of groundline were left bare at each end. Gangions were constructed of medium lay #60 thread nylon, becket material was medium lay #72 thread nylon, and groundline was medium lay 9.5 mm (3/8 in) diameter nylon.

A set of gear consisted of a flag and buoy array at each end followed sequentially by a 9.5 mm diameter nylon buoyline, a 92 m (50 fm) section of 9.5 mm polypropylene floating line, a 16 kg (35 lb) piece of chain (to dampen the effect of wave surge on the buoyline), 92 m of 9.5 mm nylon, a 27 kg (60 lb) halibut anchor, and 366 m (200 fm) of 9.5 mm nylon. The groundline was weighted with 3.2 kg (7 lb) lead balls at the end of each skate. Hooks were hand baited with chopped squid (*Illex spp.*) at a rate of about 5.7 kg (12.5 lb) per 100 hooks. Squid heads and tentacles were not used for bait.

Total groundline set each day was 16 km (8.6 nmi) long and contained 160 skates and 7,200 hooks. Two eighty skate groundlines laid end to end were set at each station along the upper continental slope. Usually a single groundline of eighty skates was set at each station in the gullies.

OPERATIONS

The 75-day charter period began in Unalaska, Alaska, and ended in Petersburg, Alaska. It was divided into three legs of 25 days. During Leg 1, the survey sampled from the Islands of Four Mountains eastward to Shelikof Strait. Leg 2 began near Chirikof Island and continued eastward to Yakutat. Leg 3 completed the survey from Yakutat to Dixon Entrance.

The survey period in 1991 was 2-1/2 weeks later than in 1988-90. From 1988-90, the survey period was June 26-September 12. The 1991 survey was delayed to avoid the commercial fishing period, which was postponed from April 1 to May 15.

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[1] Citation of the above brand name does not constitute U.S. government endorsement.

Seventy-seven days were used to complete the survey, including 61 days of survey sampling, 2 days for loading and unloading gear, 2 days for repairing equipment, 1 day for unloading product and resupply, 3 days lost to bad weather, 5 days for travel, and 3 days for port calls.

Survey Operations

Forty-five stations were sampled along the upper continental slope of the Gulf of Alaska at a rate of one station per day (Figure 1). Surveyed depths ranged from approximately 200-1,000 m, although at some stations depths to 150 m or less were sampled (Table 1). Twenty-seven stations were sampled in gullies, usually at the rate of two stations per day. The sampled gullies are Shumagin Gully, Shelikof Trough, Amatuli Gully, W-grounds, Yakutat Valley, Alsek Strath, Spencer Gully, Ommaney Trench, Iphigenia Gully, and Dixon Entrance. One station (42) was sampled on the shelf off Baranof Island. Station 45 was repeated to study catch variability.

The gear was set from shallow to deep and was retrieved in the same order, except on occasions when groundlines parted or sea conditions dictated that it be pulled from the opposite direction. Setting began about 0630 h. Retrieval began about 0930 h and was completed by about 1930 h.

Data Collection

During gear retrieval, a scientist recorded the species of each hooked fish, the condition of each unoccupied hook (absent, broken, or tangled), and whether bait remained on the hook. Time of day and depth were recorded when the first and last skates came aboard, at the beginning of each fifth skate, and when crossing into a new depth interval (0-100 m, 101-200 m, 201-300 m, 301-400 m, 401-600 m, 601-800 m, 801-1,000 m and 1,001-1,200 m).

Length was measured for sablefish, Pacific cod, grenadiers, arrowtooth flounder, rockfish, and thornyheads. Only lengths of sablefish and Pacific cod were recorded by depth interval. Pacific halibut were counted and released at the rail without measuring.

As in previous surveys, the charter vessel was allowed to retain most of the catch once the scientific data were recorded.

RESULTS

One hundred and twenty-four longline hauls (sets) were completed (Table 1). Station 1 is considered ineffective due to mechanical failure. Killer whales picked some of the fish caught at stations 1 and 4. Forty-eight skates of gear were lost due to a hang-up at station 10.

Sablefish was the most frequently caught species, followed by grenadiers and Pacific cod (Table 2). A total of 111,372 sablefish, with an estimated total round weight of 386,461 kg (851,992 lb), was recorded at the rail (Table 3).

Preliminary analyses indicate sablefish abundance in the Gulf of Alaska increased slightly from 1990-91. Further, the length composition for sablefish shifted rightward from 1990-91, indicating growth in length within the population and no significant recruitment. More detailed results for sablefish and the other species sampled during the survey will be reported in a subsequent technical document.

SCIENTIFIC PERSONNEL

Leg I (July 13-August 6)

Harold Zenger, Field Party Chief, RACE
Larry Haaga, RACE
Robert Caruso, REFM

Leg II (August 9-September 1)

Michael Sigler, Field Party Chief, ABL
Larry Haaga, RACE
Chris Derrah, ABL

Leg III (September 3-27)

Harold Zenger, Field Party Chief, RACE
Michael Martin, RACE
Mark Blaisdell, REFM

RACE - Resource Assessment and Conservation Engineering Division
ABL - Auke Bay Laboratory
REFM - Resource Ecology and Fisheries Management Division

For further information contact either

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Table 1.--Haul number (set), preassigned station number, and starting and ending positions and depths for the 1991 NMFS longline survey of the Gulf of Alaska, July 13 - September 27.

Haul no.	Station no.	Start lat. (ddmm.m)	Start long. (dddmm.m)	End lat. (ddmm.m)	End long. (dddmm.m)	Start depth (m)	End depth (m)
1	1	5235.7	16930.8	5233.1	16932.2	137	309
2	1	5232.0	16932.8	5228.5	16930.8	309	508
3	3	5311.2	16651.3	5307.5	16653.3	219	315
4	3	5307.2	16653.2	5303.7	16653.2	323	531
5	2	5257.7	16808.0	5254.5	16812.2	123	405
6	2	5254.4	16812.3	5250.6	16813.7	404	640
7	4	5334.6	16541.6	5330.2	16543.9	121	320
8[a]	4	5329.9	16544.2	5326.0	16547.6	341	488
9	5	5344.0	16428.6	5340.7	16433.4	135	309
10	5	5340.5	16433.7	5337.5	16439.5	322	673
11	6	5358.0	16316.1	5354.2	16319.9	117	365
12	6	5354.1	16320.8	5350.9	16325.8	496	750
13	7	5407.7	16138.8	5405.1	16145.0	134	362
14	7	5404.8	16145.5	5403.4	16152.4	550	880
15	8	5418.8	16104.1	5415.2	16109.1	179	432
16	8	5415.0	16109.7	5411.4	16115.4	467	985
17	9	5421.4	16014.8	5416.9	16019.1	142	382
18	9	5416.6	16019.3	5412.7	16021.3	413	700
19	10	5430.3	15915.9	5426.4	15920.8	147	267
20[b]	10	5426.2	15921.3	5422.3	15927.0	280	700
21	11	5437.5	15835.3	5433.5	15839.3	134	369
22	11	5433.2	15839.7	5429.1	15844.8	386	780
23	12	5450.7	15744.4	5446.7	15749.1	200	432
24	12	5446.4	15749.6	5441.9	15753.1	421	534
25	254[c]	5506.6	15830.6	5503.3	15835.1	191	210
26	154	5502.7	15831.4	5459.5	15836.4	210	158
27	149	5547.0	15604.9	5545.8	15611.4	206	239
28	249	5545.0	15612.4	5543.7	15620.0	242	250
29	248	5702.3	15524.8	5700.0	15518.6	254	264
30	148	5659.7	15512.0	5659.4	15503.9	176	235
31	251	5720.8	15515.2	5719.3	15523.4	245	260
32	151	5720.8	15502.8	5721.0	15511.3	241	243
33	150	5611.1	15558.0	5610.7	15605.4	196	241
34	250	5613.8	15608.1	5615.1	15615.3	247	267
35	13	5514.2	15640.7	5510.4	15644.4	177	334
36	13	5510.2	15644.8	5506.2	15645.8	314	764
37	14	5538.1	15550.3	5534.2	15551.9	157	211
38	14	5534.1	15552.0	5530.3	15550.6	211	213
39	16	5602.3	15434.1	5558.2	15434.7	245	546
40	16	5557.8	15435.1	5554.1	15435.3	573	882
41	15	5545.7	15508.5	5541.9	15511.2	160	312
42	15	5541.6	15511.5	5537.9	15515.5	323	594
43	17	5558.3	15401.5	5554.1	15401.1	241	497
44	17	5554.0	15401.2	5549.8	15402.5	518	907

Table 1.--continued

Haul no.	Station no.	Start lat. (ddmm.m)	Start long. (dddmm.m)	End lat. (ddmm.m)	End long. (dddmm.m)	Start depth (m)	End depth (m)
45	18	5616.8	15303.4	5614.2	15310.3	219	450
46	18	5614.4	15310.3	5612.3	15311.0	476	753
47	19	5628.5	15205.5	5624.3	15208.3	91	158
48	19	5624.2	15208.7	5621.4	15214.1	166	710
49	20	5706.8	15113.5	5703.2	15116.1	264	524
50	20	5702.8	15116.8	5658.5	15118.8	552	854
51	21	5723.9	15034.6	5719.2	15036.2	216	457
52	21	5719.8	15036.3	5716.1	15037.3	464	647
53	22	5737.6	14955.7	5733.4	14957.6	407	560
54	22	5733.0	14958.1	5728.6	15000.3	580	931
55	23	5758.3	14910.4	5754.6	14915.0	166	505
56	23	5754.4	14915.6	5751.3	14920.7	514	846
57	24	5817.3	14837.0	5813.2	14839.7	227	512
58	24	5812.9	14839.9	5809.1	14842.0	529	790
59	25	5841.2	14820.8	5836.8	14820.3	280	433
60	25	5836.5	14820.5	5832.3	14819.8	446	888
61	159	5843.7	14911.8	5846.2	14904.8	174	217
62	259	5848.3	14902.3	5850.5	14855.7	233	250
63	26	5907.5	14839.2	5903.2	14839.2	152	191
64	26	5903.0	14839.2	5858.6	14839.2	195	239
65	27	5909.1	14736.8	5904.8	14737.3	225	485
66	27	5904.4	14737.8	5900.3	14738.8	482	876
67	28	5915.7	14651.2	5913.0	14657.9	190	605
68	28	5912.5	14659.1	5908.8	14704.2	617	1182
69	29	5930.0	14531.9	5930.9	14540.3	158	644
70	29	5930.9	14541.3	5931.1	14549.2	672	530
71	30	5931.2	14443.6	5929.0	14451.4	178	487
72	30	5928.8	14452.4	5926.5	14500.6	471	953
73	31	5933.2	14339.8	5933.4	14348.5	174	727
74	31	5933.5	14350.0	5934.9	14357.4	724	850
75	262	5940.4	14323.4	5943.1	14330.5	293	312
76	162	5944.9	14335.9	5946.0	14342.9	297	158
77	32	5933.0	14234.3	5935.0	14240.8	130	592
78	32	5935.4	14241.4	5934.6	14248.3	581	636
79	33	5923.4	14210.2	5925.8	14217.5	233	340
80	33	5926.0	14218.0	5928.4	14225.6	372	958
81	34	5902.9	14121.0	5902.8	14129.4	302	568
82	34	5902.4	14138.4	5902.7	14130.2	908	612
83	163	5921.5	14115.6	5924.7	14110.3	320	326
84	263	5925.5	14104.5	5925.0	14056.1	160	232
87	35	5843.7	14053.7	5841.5	14047.5	556	640
88	35	5841.4	14048.8	5841.3	14038.6	238	526
89	164	5840.0	13905.0	5840.1	13913.2	163	248
90	264	5838.7	13920.4	5836.4	13926.9	254	257

Table 1.--continued

Haul no.	Station no.	Start lat. (ddmm.m)	Start long. (dddmm.m)	End lat. (ddmm.m)	End long. (dddmm.m)	Start depth (m)	End depth (m)
91	36	5828.2	13928.2	5827.5	13935.2	197	520
92	36	5827.6	13935.8	5825.0	13941.2	518	758
93	37	5808.6	13844.5	5808.5	13852.2	280	962
94	37	5808.9	13853.2	5811.1	13857.5	500	1018
95	38	5752.8	13723.1	5753.2	13730.6	200	619
96	38	5753.3	13731.7	5753.4	13738.3	657	773
97	160	5755.2	13701.6	5755.4	13709.7	387	444
98	260	5758.4	13705.5	5758.2	13713.8	190	410
99	39	5734.4	13636.7	5736.9	13638.6	212	676
100	39	5737.1	13640.0	5739.0	13645.0	704	811
101	40	5711.6	13614.3	5713.6	13620.6	214	756
102	40	5714.1	13621.3	5715.2	13625.7	622	1040
103	41	5651.2	13560.0	5653.9	13606.2	212	842
104	41	5654.9	13607.4	5658.7	13608.0	812	876
105	42	5623.2	13521.3	5622.9	13529.2	154	190
106	42	5623.0	13529.7	5622.3	13537.2	190	253
107	43	5559.2	13526.8	5601.5	13532.5	357	658
108	43	5602.2	13533.6	5605.0	13538.4	696	920
109	153	5556.1	13454.1	5600.3	13455.2	209	368
110	253	5602.5	13456.1	5605.2	13501.6	362	356
111	165	5532.8	13427.0	5635.0	13433.6	190	265
112	265	5531.9	13440.0	5534.5	13445.8	262	289
113	44	5533.4	13458.3	5534.5	13504.0	245	673
114	44	5534.8	13504.6	5537.6	13508.8	660	788
115	45	5521.3	13444.3	5523.5	13450.4	270	610
116	45	5523.8	13451.0	5523.7	13457.5	591	810
117	46	5454.2	13417.2	5457.5	13421.5	221	524
118	46	5457.9	13422.0	5501.3	13427.9	515	890
119	47	5428.2	13355.7	5429.4	13401.7	255	713
120	47	5429.5	13402.5	5432.9	13404.7	865	755
121	261	5435.9	13301.6	5435.8	13307.5	405	411
122	161	5438.9	13251.1	5435.8	13256.1	151	378
123	345	5521.1	13444.3	5523.4	13450.4	319	647
124	345	5523.9	13451.3	5523.1	13458.1	611	896

a. Light depredation of hooked sablefish by killer whales occurred near end of gear retrieval.

b. Lost first 48 skates of this haul.

c. Three digit station numbers in the 100's and 200's refer to adjacent gully stations where the first digit represents the set number and the next two refer to the station number that appears in Figure 1. Station 345 is a replicate of station 45. Each haul (or set) contains 80 skates of gear.

Table 2.-- Catch in number by species and station for the 1991 NMFS domestic longline survey of the Gulf of Alaska, July 13 - September 27. SF = sablefish, PC = Pacific cod, GR = giant grenadiers, PH = Pacific halibut, ATF = arrowtooth flounder, RF = red rockfish, ST = shortspine thornyheads, SK = skates, and OS = other species.

Station	SF	PC	GR	PH	ATF	RF	ST	SK	OS[a]
1[b]	207	4	145	321	187	15	100	45	57
2	319	638	1,800	324	168	352	220	24	23
3	628	10	624	68	272	75	287	2	13
4[c]	573	657	1,509	133	240	11	166	47	34
5	1,197	412	1,889	102	116	14	98	17	57
6	1,080	659	896	257	252	157	154	35	39
7	861	676	804	243	232	147	96	9	20
8	890	239	1,726	70	140	42	85	10	73
9	1,223	768	1,151	151	234	97	65	9	15
10[d]	1,004	645	402	71	154	1	18	2	3
11	1,797	277	1,080	193	228	63	136	4	35
12	1,373	569	1,281	69	261	75	205	2	10
13	2,074	63	710	145	301	49	313	1	39
14	1,908	713	0	838	800	16	4	10	71
15	1,101	251	738	395	547	30	99	55	62
16	2,065	0	1,083	72	175	94	355	22	7
17	1,441	30	1,329	140	95	97	228	10	309
18	2,200	1	857	116	86	41	329	21	107
19	624	768	108	1,391	394	100	36	17	148
20	1,993	0	581	49	190	34	51	5	158
21	2,234	76	258	123	436	53	197	6	14
22	1,507	1	460	2	38	2	187	3	206
23	2,088	70	859	136	186	65	219	5	131
24	1,452	68	838	77	139	155	328	13	37
25	1,353	49	431	156	108	187	159	14	228
26	3,396	86	0	273	110	1	32	73	96
27	1,109	355	534	105	49	222	166	10	211
28	1,921	51	622	57	20	40	141	7	1,008
29	1,286	53	537	37	37	363	199	23	28
30	1,979	80	227	75	68	89	142	13	191
31	1,993	23	602	60	24	30	144	3	8
32	3,884	126	139	108	19	27	212	7	78
33	1,826	94	76	141	79	136	170	32	162

Table 2.--continued

Station	SF	PC	GR	PH	ATF	RF	ST	SK	OS
34	2,871	0	123	62	13	349	148	12	85
35	2,374	0	128	51	15	319	74	12	47
36	2,037	17	219	62	50	572	66	21	90
37	1,416	7	658	11	9	699	34	5	353
38	2,641	7	169	40	11	109	63	12	113
39	3,446	3	218	35	8	135	77	1	21
40	3,833	22	160	117	24	112	119	4	161
41	3,187	9	217	106	18	74	88	4	105
42	554	630	0	997	99	2	18	55	670
43	2,383	0	62	8	6	367	146	5	122
44	2,422	84	81	45	27	110	71	12	95
45	2,862	15	49	9	44	319	194	17	143
46	2,022	45	90	35	31	648	111	8	167
47	2,381	0	194	4	23	459	163	18	75
148*	278	1,284	0	282	427	8	0	28	5
149	576	464	0	274	611	3	0	62	16
150	611	322	0	162	232	11	0	54	6
151	597	1,214	0	147	99	0	0	47	31
153	594	44	0	148	184	68	373	61	88
154	1,057	201	0	167	173	0	0	36	13
159	1,163	29	0	31	36	3	27	43	249
160	2,362	0	10	6	6	5	13	1	3
161	817	51	0	113	29	7	79	80	616
162	510	42	0	142	124	8	47	69	91
163	931	19	0	96	124	27	117	50	64
164	675	70	0	91	228	5	7	67	260
165	228	698	0	302	64	1	23	20	356
248	537	610	0	169	518	0	0	24	23
249	954	244	0	269	239	19	0	105	22
250	354	1,237	0	103	357	2	0	62	27
251	458	660	0	144	70	0	0	19	6
253	1,861	1	0	98	70	25	173	51	99
254	821	11	0	67	54	1	0	55	13
259	1,354	13	0	73	86	25	61	47	261
260	1,807	3	2	26	3	5	3	12	41

Table 2.--continued

Station	SF	PC	GR	PH	ATF	RF	ST	SK	OS
261	1,144	0	0	55	24	21	158	55	98
262	638	0	0	147	20	1	28	29	44
263	1,418	0	0	32	43	15	39	20	11
264	885	0	0	107	48	14	17	52	35
265	899	64	0	341	59	3	42	13	83
345	2,828	0	45	6	46	667	157	8	109
Total	111,372	16,632	26,721	11,678	10,737	8,098	8,077	1,912	8,595

a. Other species in order of catch frequency: Spiny dogfish, popeye grenadier, sea anemone, redbanded rockfish, walleye pollock, Dover sole, yelloweye rockfish, lingcod, starfish, rosethorn rockfish, flathead sole, spotted ratfish, sea pens, coho salmon, Pacific sleeper shark, tanner crab (*Chionoecetes tanneri*), unidentified sculpins, basketstars, Pacific flatnose, yellow Irish lord, blackfooted albatross, dusky rockfish, giant wrymouth, silvergrey rockfish, blackfin sculpin, sponges, Pacific pomfret, rock sole, bigmouth sculpin, brown king crab, coral, unidentified tanner crab, brittlestar, salmon shark, blue shark, unidentified rockfish, tanner crab (*C. bairdi*), Pacific hagfish, unidentified poacher, golden king crab, red king crab, octopus, armourhead sculpin, greenling, unidentified salmon, bocaccio, canary rockfish, box crab, sea cucumber.

b. Ineffective set: Hydraulic steering failure caused gear to be dragged excessively across bottom resulting in numerous snarls, hangups, and extensive gear damage. Killer whales picked some of the sablefish off the gear.

c. Light depredation by killer whales occurred near end of gear retrieval.

d. Lost 48 skates.

e. Three digit station numbers in the 100's and 200's refer to adjacent gully stations where the first digit represents the set number and the next two refer to the station number that appears in Figure 1. Station 345 is a replicate of station 45. Each three digit station contains 80 skates of gear.

Table 3.--Mean length, mean round weight, mean dressed weight, number, and estimated total round weight of sablefish, by station, for the 1991 NMFS longline survey of the Gulf of Alaska, July 13 - September 27.

Station number	Mean length (cm)	Mean round weight (kg)[a]	Mean dressed weight (lb)[b]	Number of sablefish	Estimated total round weight (kg)[c]
1	67.3	3.4	4.5	207	704
2	69.6	3.7	4.9	319	1,180
3	64.2	2.9	3.8	628	1,821
4	62.2	2.6	3.4	573	1,490
5	63.5	2.8	3.7	1,197	3,352
6	68.7	3.6	4.8	1,080	3,888
7	70.6	3.9	5.2	861	3,358
8	65.3	3.1	4.1	890	2,759
9	66.3	3.2	4.2	1,223	3,914
10	65.9	3.1	4.1	1,004	3,112
11	67.9	3.4	4.5	1,797	6,110
12	68.4	3.5	4.6	1,373	4,806
13	67.6	3.4	4.5	2,074	7,052
14	65.4	3.0	4.0	1,908	5,724
15	64.8	3.0	4.0	1,101	3,303
16	66.9	3.3	4.4	2,065	6,815
17	67.6	3.4	4.5	1,441	4,899
18	68.9	3.6	4.8	2,200	7,920
19	67.8	3.4	4.5	624	2,122
20	66.5	3.2	4.2	1,993	6,378
21	64.5	2.9	3.8	2,234	6,479
22	65.8	3.2	4.2	1,507	4,822
23	65.8	3.1	4.1	2,088	6,473
24	66.1	3.2	4.2	1,452	4,646
25	67.7	3.4	4.5	1,353	4,600
26	69.8	3.7	4.9	3,396	12,565
27	65.2	3.1	4.1	1,109	3,438
28	69.6	3.7	4.9	1,921	7,108
29	68.5	3.5	4.6	1,286	4,501
30	68.8	3.6	4.8	1,979	7,124
31	68.2	3.5	4.6	1,993	6,976
32	70.3	3.9	5.2	3,884	15,148

Table 3.--continued

Station number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
33	66.2	3.3	4.4	1,826	6,026
34	69.0	3.6	4.8	2,871	10,336
35	68.4	3.5	4.6	2,374	8,309
36	69.5	3.8	5.0	2,037	7,741
37	71.9	4.2	5.6	1,416	5,947
38	72.5	4.3	5.7	2,641	11,356
39	71.3	4.1	5.4	3,446	14,129
40	70.0	3.8	5.0	3,833	14,565
41	73.1	4.4	5.8	3,187	14,023
42	67.4	3.4	4.5	554	1,884
43	67.1	3.3	4.4	2,383	7,864
44	68.5	3.5	4.6	2,422	8,477
45	67.4	3.4	4.5	2,862	9,731
46	69.0	3.6	4.8	2,022	7,279
47	69.4	3.7	4.9	2,381	8,810
148	67.5	3.3	4.4	278	917
149	69.2	3.6	4.8	576	2,074
150	65.1	3.0	4.0	611	1,833
151	65.1	3.0	4.0	597	1,791
153	65.6	3.1	4.1	594	1,841
154	63.6	2.8	3.7	1,057	2,960
159	65.1	3.0	4.0	1,163	3,489
160	70.0	3.9	5.2	2,362	9,212
161	66.3	3.2	4.2	817	2,614
162	64.2	3.0	4.0	510	1,530
163	62.4	2.7	3.6	931	2,514
164	71.6	4.2	5.6	675	2,835
165	59.1	2.3	3.0	228	524
248	65.3	3.0	4.0	537	1,611
249	66.8	3.2	4.2	954	3,053
250	64.8	2.9	3.8	354	1,027
251	66.6	3.2	4.2	458	1,466
253	67.2	3.4	4.5	1,861	6,327

Table 3.--continued

Station number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
254	62.2	2.6	3.4	821	2,135
259	69.0	3.6	4.8	1,354	4,874
260	69.0	3.7	4.9	1,807	6,686
261	65.5	3.0	4.0	1,144	3,432
262	59.1	2.3	3.0	638	1,467
263	57.7	2.6	3.4	1,418	3,687
264	68.3	3.6	4.8	885	3,186
265	63.6	3.0	4.0	899	2,697
345	67.5	3.4	4.5	2,828	9,615
				111,372	386,461

a. Mean weight was estimated by applying a length-weight relationship to the length frequency distributions from each station.

b. Mean dressed weight was estimated using a recovery rate of 0.6 of round weight in pounds.

c. Estimated total round weight is the product of mean round weight and the number of hooked sablefish that came to the surface, including a small percentage that was lost during landing.

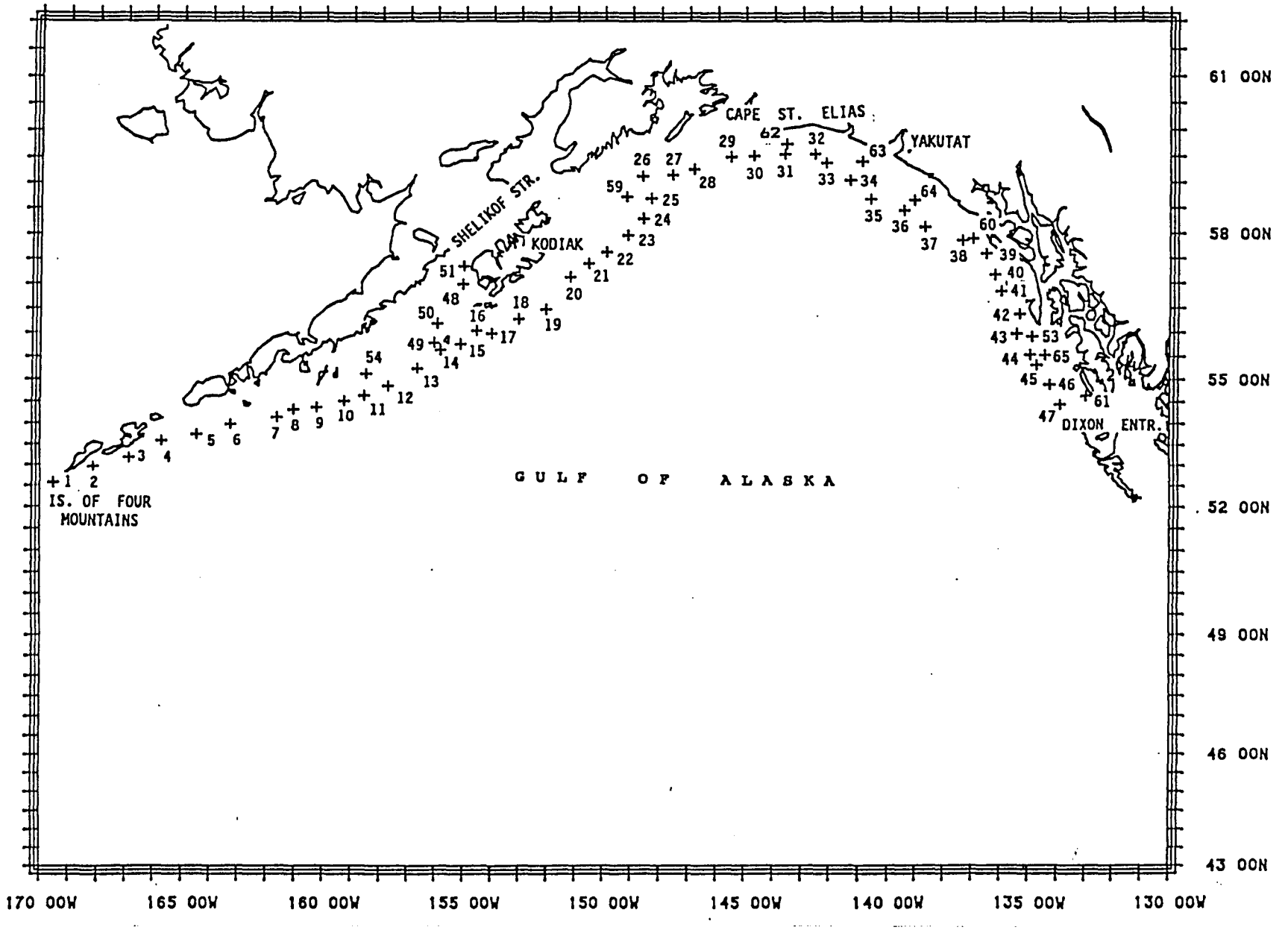

Figure 1.--Station locations for the 1991 NMFS Gulf of Alaska longline survey. Station numbers between 48 and 65 refer to gully stations and actually represent a pair of adjacent stations (e.g. 53 locates stations 153 and 253).